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Tuberculosis Among the Nebraska Winnebago

A Social Study on an Indian Reservation

By Margaret W. Koenig, M. D.

With Illustrations and Charts

Published by the Nebraska
State Historical Society

Lincoln, Nebraska

1921

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Winnebago Indian Agency

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INTRODUCTION

The Winnebago is one of the tribes known longest and least by white men. Upon the Omaha, Pawnee, Cheyenne and Kiowa tribes there is an extensive literature, representing years of close contact and study by scientific scholars, but neither in Nebraska nor in Wisconsin has the Winnebago received similar attention. No careful scientific study of the Winnebago language and its relationship to other Indian tongues had been made until the preliminary work of Dr. Paul Radin of Columbia University about ten years ago.

The exiled wanderings of the Winnebago from their old Wisconsin-Minnesota home to their final Nebraska location make a story as romantic and tragic as that told by Helen Hunt Jackson in Ramona.

No further emigration is possible for the tribe upon this planet. It must survive or perish where it now is. In Nebraska its fate is closely connected with that of its white neighbors. The battle for the life of the Winnebago tribe is therefore a battle for Nebraska.

This study of the Nebraska Winnebago by Dr. Margaret W. Koenig is one of vital importance to our state. The Nebraska State Historical Society gladly welcomes it to its list of publications.

Most of the photographs used in the illustrations are from the camera of Frank H. Shoemaker, one of the most successful artists in dealing with nature. A special winter trip to Winnebago was made for some of them.

July 20, 1921. ADDISON E. SHELDON,
Supt. Nebraska State Historical Society.

21783

FOREWORD

The seedthought for this study originated with Mrs. K. R. J. Edholm, executive secretary of the Nebraska Tuberculosis Association. It was conducted in co-operation with the Department of Sociology of the University of Nebraska, and the field work was financed by the National Tuberculosis Association. The purpose was to ascertain by direct investigation, first-hand facts and conditions pertaining to Winnebago Indian life, with particular reference to tuberculosis. To this end a field study was made on the reservation during the months of July and August, 1919.

It is hoped that the publication of this study may arouse public interest to such an extent that substantial assistance will be given the government in carrying out its constructive health program for the physical welfare of our Indian friends.

My deep appreciation and thanks are extended to all those who have entered into the spirit of the work and have furnished information and other aid. A large share of the success of this report is attributed to the government and mission workers on the reservation and the Indians, who responded so willingly and cheerfully in the promotion of the work, and without whose generous help the collection of this data would not have been possible. Especial recognition is due Mrs. Addie Boucher, Winnebago Indian nurse, and Miss Anna Berkenpas, nurse and field-worker for the Dutch Reformed Mission, for their invaluable personal services; and Superintendent C. D. Munro, who placed the records of

the agency at my disposal, and extended other courtesies. Grateful acknowledgment is made to the Commissioner of Indian Affairs for his co-operation; to the Nebraska State Historical Society for providing the illustrations; to Harry H. Laughlin of the Eugenics Record Office, Cold Spring Harbor, Long Island, New York, and Dr. H. J. Lehnhoff of Lincoln, Nebraska, who read the manuscript of the following pages and gave the benefit of their criticism. I am under the deepest obligation to Dr. Hattie Plum Williams, Associate Professor of Practical Sociology in the University of Nebraska, for her personal interest and invaluable assistance in the preparation of this material.

MARGARET W. KOENIG.

Lincoln, Nebr., July, 1921.

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CHAPTER I

HISTORICAL AND SOCIOLOGICAL BACKGROUND

1. The Winnebago Tribe

The Winnebago are a branch of the great Siouan linguistic family of North American Indians.[1] They have been known to the whites since about 1634 when they were located in the timber and lowlands bordering on Lake Winnebago in east central Wisconsin. From the nature of their habitat they were forest Indians, living in a more or less settled state. Their dwellings were permanent bark or mat wigwams. They engaged in agriculture, corn being the chief product, and in fishing and trapping. Their activities as fur traders figured prominently in the early history of the locality where they had lived for generations in comfort and happiness. They were at this time described by travelers and missionaries as a "prosperous people," a fine-looking and stalwart race.

After two centuries of undisturbed residence misfortune overtook them. They had suffered the usual tragedies of Indian tribes. Several times their ranks had been decimated and their tribal strength reduced by war, famine, and disease. In their contact with unprincipled and heartless whites—licensed traders and liquor dealers—they had experienced, now and again, the loss of "their money, their goods, their food, their clothing, their virtue, and their health." Finally the rapid advance of white settlers following the Black Hawk War (1832) had resulted in the forced sale of their lands to the United States in 1837. But their peculiar misfortune lay in the fact that for a generation

[1]The chief sources for the history of the Winnebago are: *Report of Commissioner of Indian Affairs for the years* 1845, 1846, 1847, 1862, 1864, 1865, 1867 and 1869; *Handbook of American Indians;* Lawson, P. V. "The Winnebago Tribe," in *Wisconsin Archeologist,* VI, 78-114.

following the forced migration from their native habitat, the Winnebago were without a permanent home. Settled by the government in no less than five different locations they finally separated voluntarily, some throwing themselves upon the charity of a neighboring tribe and others wandering back to their original haunts.

The first removal was made under protest, the tribe repudiating the sale of their lands and claiming that the envoys were not authorized to arrange for their transfer. In spite of their objections, part of the tribe was forcibly moved to their new location in northeastern Iowa in 1840. The open, timberless country was a distinct change from their forest home and there was much suffering from improper housing, insufficient food and disease. In 1846 this group was removed to a reservation at Long Prairie, Minnesota. Again the location proved unsuitable and ill-adapted to their native needs and most of them scattered throughout the state. In 1855, 1300 Winnebago, some from Wisconsin and some of those scattered throughout Minnesota, were placed on a reservation at Blue Earth, Minnesota, a location of their own choice and most highly valued by them. Here, in an environment suited to their nature, they quickly began to recover and to regain some of their former prosperity.

But misfortune pursued them in the guise of the terrible "Sioux Massacre" of 1862. Although the Winnebago took no part in the affair, and even though they offered their services in punishing the Sioux, the frightened inhabitants of Minnesota demanded the removal of all Indians. This was provided for by a special Act of Congress, February 21, 1863, which designated Crow Creek, near Pierre, South Dakota as their reservation. The removal was carried out in a most cruel manner. An official of the Indian service describes it thus in a report to the Commissioner of Indian Affairs:[1] "Hurried from their comfortable homes in Minnesota, in 1863, almost without previous notice, huddled together on

[1] *Report of the Commissioner of Indian Affairs for the year* 1865, 410.

steamboats with poor accommodations, and transported to the Crow Creek agency, in Dakota Territory, at an expense to themselves of more than $50,000, they were left, after a very imperfect and hasty preparation of their new agency for their reception, upon a sandy beach on the west bank of the Missouri river, in a country remarkable only for the rigors of its winter climate and the sterility of its soil, to subsist themselves where the most frugal and industrious white man would fail five years in every six to raise enough grain upon which to subsist a family."

In addition to physical hardship the Winnebago suffered mental distress. They believed that their loyalty to the government should have entitled them to consideration and kind treatment. When they became convinced that public opinion demanded their leaving the home to which they had become attached, they were assured by the government that it would place them in a location as favorable as the one which they were leaving. Not only did it fail to keep its promise to them in this, but it stupidly placed their enemy, the Sioux, upon the same reservation to be occupied jointly by the two tribes.

Broken in health and in spirit, the Winnebago faced the alternative of abandoning the agency or dying from cold and starvation. They chose to leave and in the winter of 1863-64 many made their way to the Omaha reservation in northeast Nebraska, arriving there in a destitute condition.[3] A large number died of cold and hunger on the way. Out of 2000 taken to Crow Creek, over 1200 had reached the Omaha reservation by September, 1864. Many, through fear of the Sioux, fled from Crow Creek and wandered about

---

[3]Thomas L. Sloan, President of the Society of American Indians, says of their arrival: "When they came to this location they were affected with tuberculosis, syphilis and other diseases. Many of them had scrofulous sores on their faces, necks and bodies. At the time they came here and for many years after, their necessities were such that they went about the country picking up domestic animals that had died and used the flesh for food. It was particularly noticeable that as soon as they set to work farming and procured means from their labor they improved in their habits, health and general appearance."

through the white settlements. Most of the remainder scattered into their old haunts in Wisconsin among their native woods and streams where, without a reservation and in defiance of several attempts on the part of the government to remove them, they remain to this day.[4]

2. The Winnebago in Nebraska

As suggested above, the Winnebago tribe of Indians consists today of two groups, the Wisconsin and the Nebraska. It is of the latter group that this study is made. These Winnebago are located on a reservation in Thurston County, Nebraska, twenty-four miles southwest of Sioux City, Iowa. This reservation was secured for them March 6, 1865, through the negotiation of a treaty made by the United States government with the Omaha tribe who then owned the land. It comprises a strip about seven miles wide and twenty-four miles long, extending east and west and traversed from north to south by creeks bordered with abundant timber. Forest-clad hills and secluded fertile valleys are numerous. The Missouri river flows along the eastern edge. There are 327 miles of highway. The Winnebago being forest Indians, the general topography of this location is well adapted to their native environment.

The Winnebago Indian Agency nestles in a beautiful valley near the center of the reservation. Here are grouped the government buildings, including the central office or administration building, the commissary, laundry, hospital, and homes of the employees. Across the creek from the agency is the Dutch Reformed Mission which maintains dormitories for the Indian children attending its school. A mile and a half distant is the village of Winnebago where, on prominences overlooking the countryside, are located the Catholic and Episcopal Missions.

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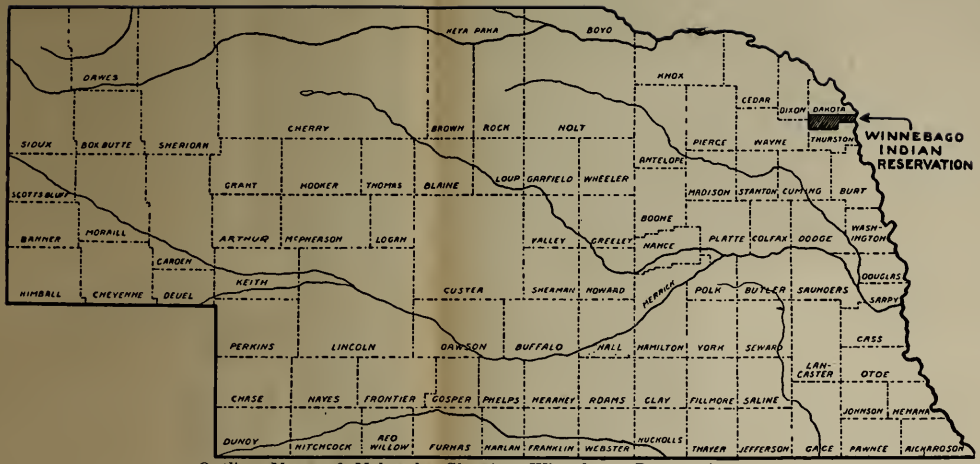
[4]According to the *Handbook of American Indians*, in 1910 there were 1063 Winnebago in Nebraska and 1270 in Wisconsin.



Outline Map. of Nebraska Showing Winnebago Reservation

According to the agency records, there were 1078 Winnebago enrolled in 1919.[5] In addition to the Indian population, the reservation contains a number of whites who lease the Indian land, maintain business enterprises in the village, or are employed about the agency. The proportion of whites is growing rapidly, while the Indian population is stationary. The following table, arranged from the local

Table I. Showing Movement of Population, 1909-1919[6]

YEAR	Male	Female	Total	Incr. or Decr. over Preceding Year	Births	Deaths	Incr. or Decr. of Births over Deaths
1909-1910	.....	.....	1057	.....	.....	.....	.....
1910-1911	585	501	1086	+29	57	39	+18
1911-1912	.....	.....	1077	— 9	52	43	+ 9
1912-1913	593	506	1099	+22	36	37	— 1
1913-1914	.....	.....	1090	— 9	38	30	+ 8
1914-1915	.....	.....	1098	+ 8	31	31	0
1915-1916	.....	.....	1096	— 2	39	40	— 1
1916-1917	.....	.....	1105	+ 9	32	....	.....
1917-1918	579	507	1086	—19	21	51	—30
1918-1919	582	496	1078	— 8	26	44	—18
Total					332	315	

census records, shows the movement of the Indian population during the past decade. In 1919 there was an increase over 1910 of only twenty-one inhabitants, every alternate year of the decade showing an actual decrease in the Indian population. The birth and death records, though they do not check with the census, corroborate this general tendency toward tribal decay. The seven years for which both data are given show an excess of fifteen deaths over

[5]The census for 1919 shows only 1068 names: 578 males and 490 females. A recent examination of other documents by agency officials disclosed the names of ten children, under five years, omitted from the roll. The revised figures are substituted in the table and used as a basis for computation throughout the study.

[6]Winnebago Indian Agency, *Local Census Records*, 1909-1919.

births.[7] Incomplete as the records probably are, they show an abnormally high death rate, the average for the eight years being 36.2 per 1000 or two and one-half times the rate for the registration area of the United States. The birth rate for the same period, computed on the official data, is 34.4 per 1000. While this is a high birth rate, it is obviously too low, since it does not permit even the slight increase shown in the enrollment. There are no available records by which to trace the cause for the very high death rate and the resulting fact that the population is stationary; but every indication points to a high infant mortality as one of the most important factors. An agency official states that she knows of but two Indian mothers who have not lost one or more of their children. In spite of a high birth rate, the Winnebago family is small, having less than two children per family.[8] Many instances were found in which a mother had borne ten to twelve children, and several cases were found in which seventeen to twenty births had occurred. In most of the latter, very few children are living at present, half of them having died in infancy.[9]

The distribution of the population according to sex and age is a significant factor. In Table I is shown the total male and female population for four years out of the decade. There is a decided excess of males, the number per

[7]Reservation workers claim that the vital statistics record is incomplete for these reasons: Many Winnebago mothers go unattended at childbirth, and frequent deaths occur on the reservation which are not reported to the local office. Although these Indians have adopted modern burial customs, only occasionally is a burial permit issued.

[8]Cf. *below*, 8.

[9]A local physician believes that much of this mortality is due to error in diet. She says that the Indian mother's unreasoning love for her children causes her to nurse her babies incessantly and to feed them everything, especially during the hot weather. Breast feeding is universal. The Indian mother as a rule is well able to nurse her child. But one instance of a bottle fed baby was met with in this study. When ill they are given little medicine because of its unpalatableness—Indian herbs and barks being preferred.. They will afford these little ones relief by giving enemas, using the leg of a chicken bone and a cow bladder as a syringe. Frequent bathing of the babies is a common practice among the Winnebago mothers.

100 females varying from 114.2 to 117.3 while for the Indian population of the entire United States there are only 103.5 males per 100 females.[10]

The distribution of the Winnebago population by age periods in 1919 shows some curious irregularities. The most striking is the small proportion under five years of age and the large percentage over sixty-five years. In a population which increases only genetically this is not a normal condition. Allowing for the careless recording of birthdays and the tendency among primitive people to state one's age in terms of the future, instead of the past, there is still an unusually small proportion of children under five. This is partially accounted for by an epidemic of measles in 1915. The autumn was extremely cold, and as young children were not kept in during their illness, most of the smaller ones developed pneumonia and died. The record for the fiscal year 1915-16 shows 15 out of 40 deaths, or 37.5 per cent to be under three years of age. Again in 1917-18, 20 deaths out of 51, or 39.2 per cent, were under three years. In addition to the unusual proportion of deaths among small children during this period, there is the increased number of stillbirths reported by volunteer workers within the past five years.[11] These factors are probably the most important ones in accounting for the unusual phenomenon shown in the age distribution for 1919; viz., that the proportion of the population under five years (11 per cent) is smaller than the proportion in either of the next two age groups.

In order to determine the distribution for a normal period, the population for 1913 was analyzed. This year was chosen because it preceded the war, was more than five years distant from the data for 1919, and because in that year a per capita payment was made by the government to the Winnebago, and hence the probabilities of a careful census

[10]Thirteenth Census, *Abstract*, 97.

[11]As a rule, stillbirths and the births of infants who die when but a few hours old are not reported on the reservation. The recent increase in both these groups is thought by some to be due to the increase of venereal diseases.

were greater. The population for 1913 shows 13.9 per cent under five years, 11.9 per cent between five and nine years, and 7.2 per cent between ten and fourteen years. This is more nearly what one would expect, although the fact that the next three age groups are larger than the group from ten to fourteen suggests a former sweeping-off of children similar to the one within the past five yars.

The average number of persons per family among the Winnebago is small. In 1919, the 1078 persons enrolled were distributed among 291 families, with an average of

Table II. Showing Distribution by Families and Permanent Houses[12]

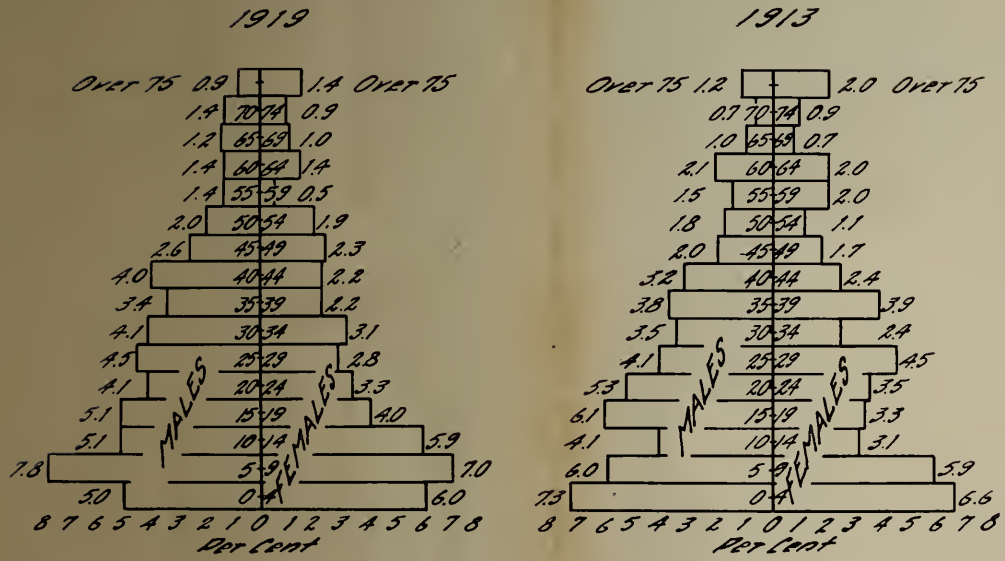
Year	Total Population	Families	
		Number	Living in Permanent Houses
1909-1910	1057	.....	.....
1910-1911	1086	.....	.....
1911-1912	1077	.....	212
1912-1913	1099	.....	249
1913-1914	1090	.....	256
1914-1915	1098	.....	256
1915-1916	1096	.....	248
1916-1917	1105	.....	.....
1917-1918	1086	291	258
1918-1919	1078	291	262

but 3.7 persons per family. The great majority of these (262 families) live in permanent houses, which are slowly but steadily increasing. The remaining 29 families, or ten per cent of the total, either live with relatives and friends or travel about from place to place.

The Winnebago show only slight intermixture with other races or with other tribes. In a total of 1463 individuals whose family connection was traced, there had occurred ten unions with Frenchmen, eight with other whites, and twelve with Indians of another tribe. These intermarriages

[12]Winnebago Indian Agency, *Local Census Records*, 1909-1919.

Distribution by Age Periods and Sex Groups of the Winnebago



were equally divided between males and females, the majority of the women (9) marrying within other tribes, and the remainder (6) with whites other than French. One or two cases of intermarriage with negroes was reported, though none of these came under observation. The distribution of the present population by degree of blood shows over eighty per cent to be full-blood Indians, and somewhat less than ten per cent to be more than half-blood.

Table III. Showing Distribution of Population per Degree of Blood[13]

Degree of Blood	Male	Female	Total	Per Cent
Full-blood	481	393	874	81.9
Mixed				
More than half Indian	52	53	105	9.8
Half or less Indian	45	44	89	8.3
Total	578	490	1068	100.0

The Winnebago are "naturally bright, intelligent people, more so than the average of Indian tribes."[14] The investigator found their knowledge and memory of family affairs to be of the highest order. As a whole they understand the English language; 850 can speak and 700 can read and write English. Most of these Indians have been educated at some government school at a distance.[15] At present the majority of the younger children are being educated on the reservation. The records show the number of children between the ages of 5 and 18 years to be 438: 213

[13]Winnebago Indian Agency, *Local Report*, 1919.

[14]Quoted from Thomas H. Roddy by Emma H. Blair, Ed. in *Indian Tribes of the Upper Mississippi and the Great Lakes Region*, II, 298.

[15]The schooling averaged by the Winnebago is the seventh grade. A few enter the high school for one or two years. A very few have graduated and attained prominence.

males and 225 females. Of this number 137 are incapacitated for attendance at school by reason of the following:

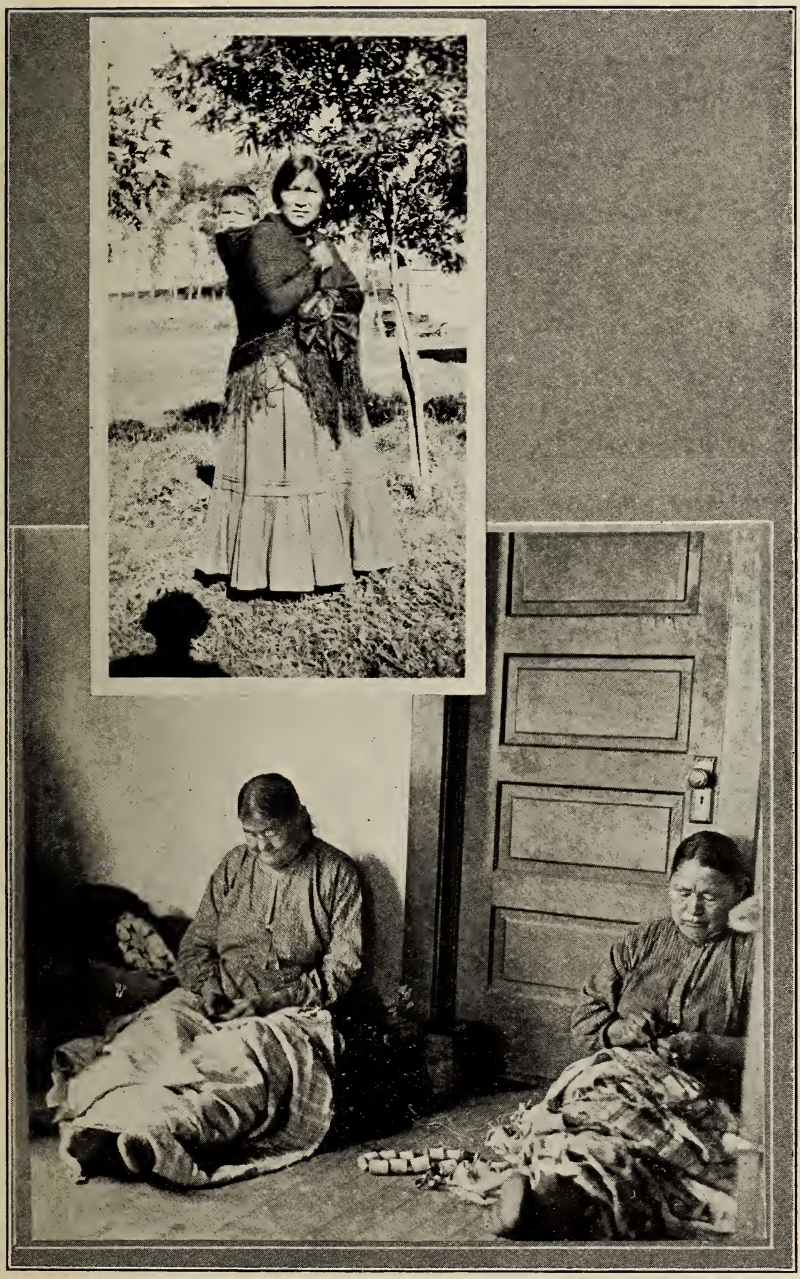
		Male	Female	Total
(a)	Ill health	3	5	8
(b)	Mental defect	0	0	0
(c)	Physical defect	4	4	8
(d)	Marriage	4	6	10
(e)	Absence or other reasons	58	53	111
		69	68	137

The remainder, 301—144 males and 157 females—are eligible for school attendance. Of this number 50 are in attendance at some distant government school; 196 are attending the schools on the reservation as follows: 80 in the Dutch Reformed Mission school, 58 in the public schools, 33 in the Episcopal Mission school, and 25 in the Catholic Mission school. Fifty-five are unaccounted for.

As to the adoption of modern dress, the men are more progressive than the women, having all adopted modern attire, except that in a number of families both men and boys still adhere to the original scalp lock. The adult women wear a modified type of their native dress, consisting of a short, loose jacket and full skirt with a deep ruffle at the bottom. An elaborate fringed shawl, usually black, is an ever present part of their daily wearing apparel. Their hair is combed straight back and either left hanging as a braid, looped, and held in place by bright ribbons or arranged in a coil low on the neck. They wear no hats or corsets. Moccasins are worn by many of the older people. A field worker states that even the young girls educated along modern lines invariably drift back to the Indian dress.

Considerable progress along the lines of Christianity is noted. In the tribal state the religious customs and social organizations were more or less interwoven and overshadowed with the mysterious. Their belief in animism[6] and

[6]All disease was regarded by them as the visitation of some spirit whose anger and wrath had been provoked or aroused by their misdeeds.



Upper—Winnebago Mother and Child

Lower—Mending Day

the interpretation of all natural phenomena gave rise to many songs, dances, ceremonies and sacrifices. The sun and thunder were their principal divinities. They believed in monsters, witches and superhuman beings; also in a future state of existence. This old paganism has been unconsciously influenced by their surroundings and by their contact and association with Christian missionaries and modern civilization. Although partially replaced by Christianity, it is still a religion tinged with mysticism which is an inherent part of the Indian's belief. At the present time the Winnebago affiliate with three distinct religious groups: the Christian Missions, the Mescal-eaters,[17] and the Medicine Lodge,[18] or old pagan worshippers.

Since 1887, the Winnebago have held their land in severalty, a privilege granted to Indians only when it is considered that they have reached the degree of stability which enables them to settle down to the occupations of the whites. The allotment law[19] gave to each head of a family 160 acres; to each other adult and to each minor with both parents dead, 80 acres; and to each minor with one or both parents

---

[17]A "new religion" introduced on the reservation by the Otoe in 1887, and claiming about one-third of the Winnebago in its membership. Its central idea revolves about the use of the mescal-button, or peyote, a species of cactus which grows near the Mexican border. In 1909 the Winnebago introduced the use of the Bible into their mescal services, some claim as a cloak to protect them in the use of the drug, others claim as a spiritual factor which has proved of great benefit to the Indians. In 1908 the Nebraska Winnebago sent a deputation to carry the new religion to Wisconsin, but failed in securing results. For different views on the value of the religion see letters of Thomas R. Roddy quoted by Emma H. Blair, Ed. in *Indian Tribes of the Upper Mississippi and the Great Lakes Region*, II, 281-2, 298; and article by Rev. J. A. Watermulder, "Mescal," in *Report of Thirty-second Annual Lake Mohonk Conference on the Indian and Other Dependent People*, (Oct. 19, 1914), 68-76. The report of the Superintendent of the Winnebago Agency to the Commissioner of Indian Affairs, April 30, 1919 (*Ed—L and O, circular* 1522, "Peyote") is valuable for its judgment on this disputed point. For psychic interpretation see Melvin R. Gilmore, *Nebraska State Historical Society*, XIX, 163-167.

[18]A secret society, ungraded, entrance to which is by initiation. To this also belong those who are not initiated but associated with its members.

[19]*U. S. Statutes at Large*, XXIV, 388.

living, 40 acres. This distributed all of the reservation except about 1000 acres, half of which lies along the Missouri and is worthless for farming. All Winnebago born since the allotment was made and who possess land received it through inheritance, or gift.

At first all of the lands were controlled and supervised directly by the superintendent of the reservation. But as rapidly as the Indians are considered capable of maintaining themselves and their families independently, they are given their patents in fee which grant them complete and exclusive control of their land. Up to the present 53 such patents[20] have been issued and it is the intention of the government to increase the number of these as rapidly as possible. In spite of the confidence of the government, many of the Winnebago are unable to resist the wiles of land speculators and their own desires, and have nothing to show for their deed in a short time after they receive it. At present, however, over two-thirds of the Winnebago are still government wards.

As soon as the Winnebago became allotted, they were permitted to lease their land, the leasing and the monthly collection of rentals being conducted usually through the agency office.[21] Since leasing their lands they have fallen into indolent habits, many doing nothing. From testimony widely different in source, this seems to be an indication of degeneration. In 1865, the superintendent of the agency reported the Winnebago to be "characterized by frugality, thrift, and industry to an extent unequalled by any other tribe of Indians in the Northwest."[22] George Hill, for fifteen years teacher of industrial arts at the agency school, says "Over thirty years ago, most of the Winnebago tilled small patches of ground, raising some corn, oats and wheat. They also did freighting by team, hauling goods from Dakota

[20]Cf. Superintendent's Report to Commissioner of Indian Affairs, 1920, Section VI, "Sales."

[21]A number of "semi-competent" Winnebago (413) are permitted to lease their land themselves, the approval of the lease by the agency office being required to make it legal.

[22]Quoted by Lawson in the *Wisconsin Archeologist*, VI, 115.

Winnebago Farm Buildings
The Tent Home in the Yard is Housing Temporary Dwellers

City to the old Indian Agency." Another witness, Thomas L. Sloan, testifies to their former industry in these words: "Many were employed as laborers outside the reservation among white people as harvest hands, wood choppers and some of them as farm laborers. Frequently when owners of land along the Missouri river were likely to have a cut-away by high water they employed large gangs of Winnebago Indians to cut the timber from it before it washed away." Steady and even casual labor is no longer a necessity to them for in recent years the lands of the Winnebago have increased greatly in value, making the tribe a wealthy one and giving an additional incentive to idleness and spendthrift habits.

Although the majority of the Winnebago live on farms, they do little farming in spite of the encouragement offered by the government. Only about one-sixth of the land (8996 acres) is tilled independently by them, the remainder (54,144 acres) being leased to the whites. One of the government officials, known as the reservation farmer, devotes most of his time to supervising the farming operations of the government wards, purchasing seed and implements and planning their work for them. He also advises with those Winnebago from whom governmental restrictions have been removed, when requested by them. Another official, known as the agency farmer, conducts a demonstration farm at the agency, both as a means of illustrating methods of farming and as a partial source of revenue for maintaining and operating the agency. Other occupations were encouraged for a number of years by the teaching of industrial arts in the government school at the agency.

A further means of encouraging the adoption of the white man's industrial customs was tried by the government. Many of the Indians early gravitated into the untillable timbered portions along the Missouri river, where the "heirship" or unallotted tribal lands lay. Here they reverted to the primitive habits followed originally in their forest home. In order to induce them to take up farming as a settled

occupation, groups of good farm buildings were erected on the cultivable lands in the western part of the reservation, and the young and middle-aged encouraged to take up

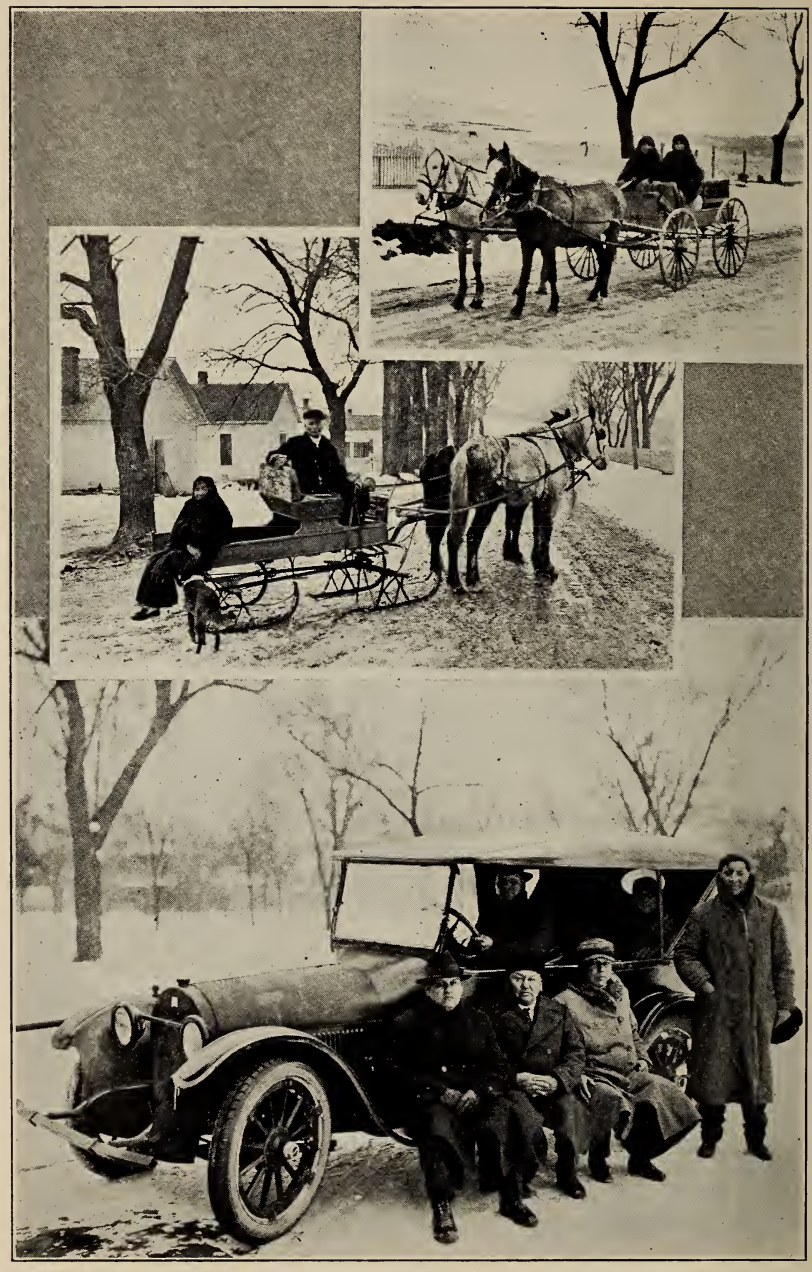
Table IV. Showing Number of Winnebago Employed in Gainful Occupations, September, 1919[23]

Working on Reservation		Working off Reservation	
Males		Males	
Farming for selves	163	Working in Sioux City	10
Ass't Gov't farmers	2	Trucking for Cudahy Packing Co., Sioux City	10
Gov't engineer, stationary	1	Fireman for Milw. St. P. R. R.	1
Restaurant keeper	1	Clerk in Gov't office in Oklahoma	1
Butcher	1	Professional ball player in major league	1
Grocery clerk	1	Minister	1
Hardware clerk	1	Total	24
Carpenters	3		
Painters[24]	4		
Shoe repairer	1		
Garage man	1		
Auto mechanic	1		
Pool hall proprietors	2		
Interpreter Dutch Reformed Mission	1		
Policemen	3		
Total	186		
Females		Females	
Music teacher	1	School teacher	1
Stenographers	3	Y. W. C. A. worker	1
Matron at hospital	1	Total	2
Laundress at hospital	1		
Ass't matron at hospital	1		
Nurse	1		
Cook	1		
Total	9	Grand Total	221

their residences there. Some have remained, but many have abandoned them, turning them over to white lessees while they have returned to the heirship land where they live in

[23]Information given by government employees.

[24]"Two work all the time, one one-third of the time and one occasionally."



Types of Winnebago Travel

Upper—On their way to the Village

Middle—Going Visiting

Bottom—Their Modern Way

little cabins and spend much of their time in idling and dancing.

The preceding table shows the number of Indians employed in gainful occupations. Only 210 males out of a total of 390 over fifteen years of age are thus engaged. A few women have taken up work outside the home, and are represented in the professions.[25]

All the efforts of the government have failed of their highest ideals chiefly through the inherent restlessness of the Indian nature. The Winnebago spend a great deal of their time in visiting with each other, which consists, says an agency official, "in sometimes starting before breakfast to eat with some relative or friend." Those who are most industrious "seem to find more time to run around than a white man in similar circumstances would think he could afford."[26] The automobile has added to the facility of travel. Many expensive cars are owned by them from which they get an unusual amount of pleasure. Travel to nearby villages and to Sioux City add to the native custom of visiting, even less desirable forms of amusement.

The endeavor to educate these Indians to become a self-supporting people appears to have been fraught with small return for the large sums so expended and the sacrifice involved. The returned youth finds no interest or occupation awaiting him, nothing in reservation life to elevate or maintain the culture acquired while at school. If there were more activities and if the Indians were engaged in tilling their own soil, these students would find a field for labor. Another factor which sets at naught the education acquired is the inability to withstand the ridicule of the older Indians because of attempting to follow in the white man's path,

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[25]The making of beautiful handwoven rugs in colors, rush matting, basketry, beadwork, clay, bark and wooden vessels were favorite occupations of the old time Winnebago women. "Of all the Indian tribes, the Winnebago women do the most beautiful needlework, using the finest thread and very small stitches. This ribbon work is distinctly their own, as they create and form their own designs." Lucy Palmer, Record Clerk, Winnebago Agency. Very little handiwork is attempted by the present generation.

[26]Ms. letter dated March 26, 1920.

so they soon drift back into the old tribal ways. The racial call is stronger than the acquired sensibility.

In all probability many of the evils now rife on the reservation would be alleviated if some plan could be devised whereby every able-bodied Indian were required to till a portion of his own land, if not otherwise engaged in keeping up the activities of the reservation. Labor is essential to the Indian's civilization as it is to the civilization of the white or the black man. Labor which will benefit the Indian, however, must be chosen for him, for his own peculiar needs and gifts. It should develop him along those lines in which he already shows aptitude. The work should be adjusted to the man, not the man be compelled to take the mould or pattern of the work.

The Winnebago were found to be human beings much like ourselves, yearning for an honest expression of real sympathy and a real feeling of humanity and true friendship. As an undeveloped people, guided and governed by a developed people, they have been weighed in the balance and found wanting. We have tried to interpret them in the terms of our own experience, forgetting that they have a distinct individuality with a system of values quite worth while even though unlike the values considered in so-called civilized society. This arrogant and often wilful misunderstanding is largely responsible for the injustice with which the Indian is treated. Could we regard him with the eye of an altruist rather than with the eye of an egoist it would be better for the Indians—and better for us.

By the Side of the Road
Winnebago Indian Graves

CHAPTER II

INCIDENCE OF TUBERCULOSIS

1. Basis of Data

In an attempt to discover the incidence of tuberculosis among the Winnebago, a study was made on the reservation extending through the months of July and August, 1919. The investigation included an examination of the recorded data at the agency, conferences with officials and volunteer workers on the reservation, and interviews with many of the Winnebago, either at the agency or in their homes. It was not possible to make a complete survey of the group, but personal examination was made of 581 Winnebago, or 54 per cent of the total Indian population of the reservation, while family histories involving 1463 persons were secured.

The agency data include the hospital records, the mortality records, the local census reports, and the disease records gathered by the Indian Office, all covering the ten year period beginning with the fiscal year July 1, 1909 and ending with June 30, 1919. No one of these series is complete or entirely accurate. Although the physicians in the Indian service report regularly on all diseases treated, as a result of the frequent change of physicians some cases remain unknown.[27] It is quite customary for the Indians to present themselves but once for treatment, depending much for a cure on their native medicine. Then too, by reason of more or less visiting among relatives and friends in other tribes and in other places for indefinite periods, cases may easily remain undetected. However, fairly complete medical statistics with uniformity of diagnosis have been kept through the years. Excellent daily records were found for the three year period, 1914 to 1917. A further important source for checking information was the Individual History Card, which gives the family connections

[27]The records show seven changes of physicians in the past nine years.

of the majority of the members of the reservation with the date of death of relatives who are deceased. Since these records are used as a basis for tracing inheritance, they are probably the most authentic records at the agency.

The method of procedure for this study consisted first in securing information from the hospital records as to the extent and ravages of tuberculosis. This was followed by personal interviews with the majority of the living cases whose names were obtained from the medical records. In many instances the interview took place in the home. With the aid of the local and agency physicians many of these living cases of tuberculosis were re-examined together with other members of the family. In a few instances the examination showed that some of the cases had become arrested, resulting in apparent recovery. In addition the examination resulted in the discovery of some pretuberculous individuals and incipient cases of tuberculosis. In the further survey of new and suspected cases of tuberculosis, the Indian hospital[28] was used as a central place for the observation and physical examination of patients, though a number of examinations were made in the homes and in the office of the local physician at Winnebago. The physical examination included the heart, lungs, lymphatic glands, skin, skeleton and other organs where suspicious symptoms presented. A few laboratory tests and x-ray examinations were made. All investigations were supplemented as far as possible by an individual history of each case, living or deceased.

No difficulty was experienced in coming into touch with these Indians, who were only too willing to be of service. In

[28]The government maintains a hospital of 36-bed capacity on the reservation with a resident physician and nurse in charge. Treatment and medicine are furnished free of cost to all Indians. A small fairly well equipped operating room is used for emergencies and minor surgery. Indians having bone or glandular tuberculosis are cared for at the hospital. Those having pulmonary tuberculosis are admitted temporarily or until disposition can be made for their removal to one of the government tuberculosis sanatoria, of which there are thirteen in the United States. Most of the Winnebago are sent to Toledo, Iowa, where only those up to twenty-one are admitted. Above this age they usually remain on the reservation with little or no care.

Indian Hospital and Grounds

visiting with them in their homes or elsewhere much valuable information regarding those physically ill among their people about the reservation was freely offered. So appreciative were they of this health work that they voluntarily presented themselves for physical examination, often driving miles to convey or correct a bit of information regarding their family history. In securing the family histories many additional cases of tuberculosis now deceased were revealed.

2. Mortality and Morbidity Rates

From all sources, information was secured concerning 237 cases of tuberculosis within the decade from 1909-10 to 1918-19 inclusive.[29] The majority of these are cited in the hospital records, but there are also included cases not mentioned there, but disclosed by members of the family or through physical examination by the investigator. Of these cases, 127 were deceased at the time the study was made.

The deceased cases show an annual average of 12.7 deaths from tuberculosis during the decade, or a mortality rate of 11.7 per 1000. This is a much higher rate than is disclosed by the government death records which show only 52 deaths from tuberculosis in seven years,[30] an annual average of 7.4, or a mortality rate of 6.8 per 1000. While this latter accords more nearly with that cited by Dr. Hrdlicka[31] (6.6 in 1907-8), both are undoubtedly too low. Since the death records omit all data for three years out of the decade, it is entirely fair to assume that the data for the years given

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[29]In addition to this number, there were found 34 living cases which may be classed as pretuberculous. In 10 of these cases, the patient gave a history of intimate contact and had some of the minor symptoms of tuberculosis. In 24 cases, the individual manifested no positive symptoms, but was a suspect because undernourished, underweight, anaemic, listless, and possessing little or no resistance to slight infections. These cases were found, as a rule, in families in which there was tuberculosis.

[30]Cf. Table V, *below*.

[31]Hrdlicka, Ales. "Tuberculosis among certain Indian tribes of the United States", Bureau of American Ethnology, *Bul. 42*, (1909), 5.

are incomplete. The mortality rate of 11.7 per 1000 among the Winnebago appears striking also when compared with other tuberculosis rates. In the registration area[32] of the United States in 1917, the death rate was 1.4 per 1000,[33] being 1.2 among the whites and 3.5 among the negroes.[34]

Of the 44 Winnebago deaths reported in 1919, 13.6 per cent were from tuberculosis; in 1915, 48.4 per cent of the reported deaths were from this disease, and in 1913, 27.0 per cent. In the seven years for which statistics are available, 18.8 per cent of the total deaths recorded among the Winnebago were attributed to tuberculosis. This is almost twice the proportion for the registration area, which runs about one-tenth.

Incomplete as are the data for computing the mortality rate from tuberculosis among the Winnebago, it is much more satisfactory than the basis of data for the morbidity rate. For the population at large, it is estimated that there are from five to ten living cases of tuberculosis for every death. On that basis there would be 127 cases of illness each year among the Winnebago, a morbidity rate of 116.0 per 1000. The agency physician in 1919 estimated two cases on the reservation for every one discovered through the hospital—a total of 120 cases or 111.3 per 1000.[35] That this estimate was not excessive is shown by the fact that in this study, 110 living cases were found at the time of the survey and these among only 581 persons. For this group it gives a morbidity rate of 189.3 per 1000. This is doubtless too high because the cases were not discovered by examinations made at random, but mostly in families in which there was a hospital record. Assuming on the other hand

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[32]The registration area includes those states in which 90 per cent of the births and deaths are registered in their respective State Departments of Health and accepted by the Bureau of Census at Washington.

[33]Bureau of Census, *Mortality Statistics*, 1917, 46.

[34]*Idem*, computed from data on p. 98.

[35]Department of the Interior, United States Indian Service. *Annual Report*, 1919. Dr. Hrdlicka's estimate from data collected in 1904 was 13.8 per 1000. *Op. cit.*, 4. For other estimates see Table V, *below*.

Table V. Mortality and Morbidity from Tuberculosis among the Winnebago, 1909-10 to 1918-19[37]

Year	Population[38]	Number of Cases of Tuberculosis Diagnosed in Hospital.[39]					Number of Cases Estimated among Winnebago.			Deaths Recorded, due to Tuberculosis of all Forms.				Deaths from all Causes	Per cent from Tuberculosis
		Total	Male	Female	Latent	Active	Male	Female	Total	Male	Female	Total	Rate per 1000		
1909-1910	1057	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1910-1911	1086	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	39	.....
1911-1912	1077	.....	.....	.....	.....	.....	.....	.....	.....	1	2	3	2.7	43	6.9
1912-1913	1087	.....	.....	.....	.....	.....	.....	.....	.....	6	4	10	9.2	37	27.0
1913-1914	1090	.....	.....	.....	.....	.....	.....	.....	20	.....	.....	8	7.2	30	26.6
1914-1915	1093	.....	.....	.....	.....	.....	.....	.....	210	.....	.....	15	13.6	31	48.4
1915-1916	1096	29	17	12	10	19	73	73	146	3	2	5	4.5	40	12.5
1916-1917	1105	43	29	14	.....	43	52	52	104	.....	.....	.....	.....	.....	.....
1917-1918	1086	38	24	14	.....	38	60	65	125	3	2	5	4.6	51	9.8
1918-1919	1178	60	35	25	14	46	68	52	120	3	3	6	5.5	44	13.6
Total										16	13	52	6.8	315	18.8

[37]Compiled from local and federal reports.

[38]Federal reports show a slightly different enrollment from the local census here used, averaging several points higher for the ten-year period.

[39]The hospital was opened for reception of patients May 1, 1916.

that it included every case on the reservation (which is manifestly not the fact) the morbidity rate for the Winnebago would be 102.0 per 1000. The true rate lies some place between these two extremes, and it is a conservative statement to say that at least one out of every eight of the Winnebago is suffering from some form of tuberculosis, either active or latent.[38]

3. Classification of Tuberculosis Cases

A classification of the 237 cases as to sex and age discloses these unusual facts: 1) a greater frequency of infection among the females than among the males; 2) a larger proportion of infected children under ten years of age and of youth between ten and twenty years than is found in the total population of the registration area. These facts receive increased emphasis when it is recalled that the proportion of females and of children under five among the Winnebago is smaller than in the general population.[40]

Of 235 cases,[41] 122, or 51.9 per cent, are females and 113, or 48.1 per cent, are males.[42] In the registration area in 1917, only 43.5 per cent of the total deaths from tuberculosis were among females, while 56.5 per cent were among males. The greater infection of females among the Winnebago is shown more strikingly when the number of living cases is compared with the number of each sex in the group. Among 496 females, there were found 59 living cases, or a female morbidity rate of 118.9 per 1000. Among 582 males were found 51 cases or a male morbidity rate of 87.6 per 1000.

The age distribution of 237 cases reveals the largest number for any one age group (44) under five years; and almost one-third the cases (85) under fifteen years. Of the total

[38] Of the 110 living cases found, 49 were active and 61 were inactive.

[40] *Cf. supra*, opposite p. 8.

[41] In two cases, the sex is unknown.

[42] Of the deceased cases, 62 are males and 63 females; of the living cases, 51 are males and 59 females.

cases classified, 50 per cent were under twenty years of age as compared with 17.5 per cent for the registration area in 1917[43]; only 35 per cent of the Winnebago were between twenty and forty years as compared with 46.9 per cent for the registration area. The greatest morbidity and

Table VI. Showing Age Distribution of 237 Cases of Tuberculosis among the Winnebago, 1909-1919

Age	Deceased			Living			Morbidity Rate	Mortality Rate
	Males	Females	Unknown	Males	Females	Total	Winnebago 1919	Reg. Area U. S. 1917
Under 5	19	16	2	3	4	44	58.8	65.5
5— 9	5	3	.....	7	3	18	62.9	17.7
10—14	4	4	.....	4	11	23	125.0	20.8
15—19	6	7	.....	14	6	33	206.2	70.8
20—24	6	6	.....	5	4	21	112.5	123.6
25—29	8	10	.....	6	11	35	215.2	127.8
30—34	3	3	.....	3	8	17	141.0	113.3
35—39	.....	6	.....	2	2	10	65.5	105.0
40—44	6	2	.....	3	4	15	122.8	85.7
45—49	1	2	.....	2	3	8	94.3	69.9
50—54	2	1	.....	.....	.....	3	.....	.....
55—59	1	.....	.....	1	1	3	.....	.....
60—64	.....	.....	.....	1	.....	1	.....	.....
65—69	.....	1	.....	.....	.....	1	.....	.....
70—74	.....	1	.....	.....	1	2	.....	.....
Over 75	1	1	.....	.....	1	3	.....	.....
Total	62	63	2	51	59			
Grand Total		127		110		237		

mortality in the group studied are in the earliest age periods. The disease is contracted in early youth and over half the deaths occurred under twenty years.[44]

[43]The data for the registration area includes only deaths from tuberculosis, and not living cases.

[44]Competent authorities claim that practically all tuberculosis is contracted before the tenth year.

This fact is shown even more strikingly by a comparison between the morbidity rates of the Winnebago and the mortality rates of the registration area for the various age periods.[45] Allowing for the greater variation always shown by small numbers, and remembering that the Indian data presented are only partial, the comparison is nevertheless interesting. The significance of the large number under five years is reduced when it is seen that the morbidity rate for that age period among the Winnebago is slightly lower than it is for the registration area. But the difference in the next three age periods is little less than startling. The years from five to twenty show the greatest immunity from tuberculosis in the population at large, while the rate among the Winnebago is from three to six times as large. The two groups agree chiefly in showing the age period from 25 to 29 to have the highest rate although the Winnebago rate is almost twice the rate for the registration area. The Winnebago show further variation in the higher rates in the upper age groups.

A few cases will illustrate the extremes of life at which tuberculosis was found among the Winnebago. The records show the youngest pulmonary cases to be those of two little girls, one succumbing at the age of one month of pulmonary hemorrhage; the other, fourteen months, still living. The oldest cases were two males, in whom the process had been of many years' duration, and who died at the ages of seventy-five and eighty years of chronic fibrinous tuberculosis. The oldest living subject seen was a woman eighty-three years of age. During the summer she was living in a tent in the yard of a relative. The sides of the tent were enclosed with mosquito netting and the bed, consisting of mattress and quilts, lay on the ground. This patient was almost completely prostrated, rising on her elbows occasionally owing to difficult, and at times labored, breathing.

[45]This comparison of somewhat dissimilar data is justified only on the ground that it is impossible to compute the mortality rate by age periods for the Winnebago, and morbidity rates for the registration area are not available.

She was expectorating freely into an open can about which flies were extremely numerous. The scene presented a picture of apparent neglect, for the sick and helpless aged are often neglected, the rations furnished them being largely consumed by relatives and visitors. An instance of the kind happened in this case when a government worker calling at the home found a feast in progress from the food sent to this ill woman the day previous.

The usual variety of forms of tuberculosis was found among the 237 cases. Pulmonary tuberculosis comprised 62.4 per cent of the total, while glandular tuberculosis, which is the prevailing form among many tribes,[46] formed only 15.6 per cent among the Winnebago. The hospital records for the past four years, however, show almost half the cases to be glandular while over half the estimated

Table VII. Forms of Tuberculosis in 237 Cases among the Winnebago, 1909-1919

Form	Number Cases	Per Cent Cases
Pulmonary	148	62.4
Glandular	37	15.6
Tuberculous Meningitis	19	8.1
Bone	11	4.6
Other forms	22	9.3
Total, all forms	237	100.0

cases belong to this type. Other forms included tuberculosis of the eye, ear, skin, knee, liver, intestines, peritoneum and diaphragm.

As to the varieties of phthisis encountered the records show three acute pulmonary cases, all of which ran a very rapid course, terminating within three months from the onset of the disease, one death occurring in the late spring and two during the midsummer months. One of these sub-

[46] Cf. Hrdlicka in *op. cit.*, 4.

jects[47] possessed with a roving disposition never remained for any length of time in one place. During the closing weeks of his life he lived in a tent, the sputum being kept in open cans and thrown out into the yard. One of the other cases, a young man of twenty-two years, had no home but freely lived around in other families, probably spreading infection as he went. Many subacute cases were noted with more moderate symptoms and a duration beyond three months. These cases were for the most part found in young adults. If they could have been induced to submit to adequate hospital care some might have become arrested cases, as the Winnebago respond rapidly under modern medical treatment. The majority of the cases of tuberculosis in older adults were of the chronic variety, with a somewhat slow and irregular process and of more than a year's duration.

The Indians in describing the condition of the tuberculous subjects speak of them as being up and down at intervals for days, weeks and months during their illness. These periods of exacerbation usually denote an extention of the infection to some other part, either the same organ or other organs. The following example well illustrates the rapidity of a tuberculous process. A young boy twelve years of age who had been ailing all winter was up and around and attended school until two months before his death when he became bedfast. He was brought to the hospital with an advanced case of pulmonary tuberculosis, both lungs showing cavity formation. The bridge of the nose was completely broken down and there was a discharging ear. Pain in the chest, moist rales, cough, free expectoration, night sweats, anorexia, emaciation, complete prostration and death conclude the picture. The duration of his ill-

[47]This was a very improvident man. Although married he never provided for his family, but all lived around with other people. A little son born of this union died at the age of one year of pulmonary tuberculosis. The wife later developed a severe infection of tuberculosis of the bowels. She recently died at the age of twenty-seven years, after six months of intense suffering, during which entire time she was bedfast.

ness was six months. This case presents a typical history as revealed by the hospital records. The disease as thus manifested shows that the inroads progress more rapidly in the Indian than in the white man. It illustrates the fact that the white man is better able to withstand the ravages of tuberculosis on account of an apparent greater resistance.

Tuberculosis of the glands of the neck appears to be quite prevalent among the Winnebago, especially in children and young adults. Removal of the glands by surgery has been the most commonly adopted procedure. In ten cases of such removals an apparent arrest followed; in four cases the process continued, involving other glands; in nine cases the glands had suppurated, one of the cases resulting in a general infection of the body, the patient dying within six months; in five cases the glands were still suppurating. One of the most advanced cases observed was that of a bright young boy eight years of age, in which the process had been of more than three years' duration, discharging continuously. The removal of some of the glands and a mastoid operation have resulted in a refusal of the wounds to heal. Several glands were still discharging and there was a discharging sinus into the left ear. The swelling had extended to the face, causing the mouth to become drawn to one side. This little patient was faithfully undergoing medical treatment, but there had been but slight improvement in his condition.

Another case was a boy of fifteen, in whom the glands on the right side of the neck had been removed a year ago. All the glands of the neck had become enlarged and hardened, encasing the neck in a collar as it were. At each side was a chain of glands extending down, probably involving some of the mediastinal, or chest glands. There was at the same time an infection of the right lung and a sunken left clavicle. Another young man of twenty-five had been a sufferer from the glandular form for ten years. During this time he had two operations on his neck. The glands were still discharging. Recently he developed an infection of the right lung.

An Indian "Hogan"

Many cases of tuberculous glands in these Indians seemed to have run a mild course, as is evidenced by the frequent scars on the necks of the older Indians who are now in apparently robust health. The theory advanced by English observers that lymphatic tuberculosis is due to bovine infection is not borne out among the Winnebago, as practically no milk is used by them.[48]

Tuberculosis of the bone among the Winnebago attacks most frequently the tibia and the hip-joint. One case involved both the hip-joint and the fibula; another the tibial epiphysis and possibly the femur; in another, the astragalus was affected. Two cases involved the knee-joint. Tuberculosis of the spine, or Pott's disease, was found in two cases. One case was a little boy who died at the age of two years; the other a young girl of seventeen, still living. This young girl seemed well until about three years ago, when she suffered a mild form of anterior poliomyelitis, since which time she began to fail. In December, 1918, she was ill at the government hospital with influenza and lobar pneumonia, following which an open lesion in her spine developed, discharging continuously. A physical and x-ray examination showed these findings: considerable adenitis in the superficial glands of the neck, right lung consolidated throughout, lower lobe diminished breathing, and heart pushed to the side.

The youngest bone case noted was that of a little, quiet, lifeless girl of five years, in which there was a discharging sinus at the outer side of the lower one-third of the left fibula. The child passed away after an illness of five months' duration. The oldest bone case was that of a man of sixty-two years, deceased, in whom the process was of nearly fifteen years' duration. Both the hip and leg presented discharging sinuses which occasionally healed temporarily. He also had pulmonary hemorrhages and a persistent cough. He always used Indian medicine and not until the

[48]There are not more than a half dozen cows owned by Indians on the reservation.

closing years of his life when mastoid trouble developed and he became bedfast, did he consult a physician. A niece[49] who after the death of her mother, was raised by this man presents one of the severest cases of pulmonary and bone tuberculosis at the present time among these Indians. The former home of this man was a one-room house with a dirt floor and with two small windows. The house contained but two beds although in the family were seven persons, some of whom, however, occupied a tent in the summertime.

It was found that in infants and young children the disease is especially apt to manifest itself in the meningeal form, the records showing nineteen cases of tuberculous meningitis. Intestinal tuberculosis appeared in three cases, in one instance as a complication of a tuberculous process elsewhere. In two cases it seemed to have appeared as a primary infection. In one of these, a little girl of two years, shreds resembling small cut black threads found in the stools on microscopical examination showed the presence of tubercle bacilli. The other was that of a woman of twenty-seven years who gave no other sign of tuberculous infection.

Two cases of tuberculosis of the skin were found, one a boy of seven years at present living on the reservation. The other was that of a deceased girl of fifteen in which the skin complicated the pulmonary form. The records show one case of tuberculosis of the liver in a girl of seven years necessitating an operation, the liver tissue on microscopical examination showing tubercle bacilli. Four cases of tuberculosis of the eyeball have resulted in an apparent arrest, the subjects now residing on the reservation.

In twenty-five cases there existed multiple foci of infection of the pulmonary with the glandular, bone, skin, stomach, kidney and intestinal tuberculosis. In twenty-seven cases the patient harbored a positive syphilitic infection. The majority of cases in tuberculous adults were compli-

[49]This niece has a brother living in Wisconsin who is well and strong, having served in the recent world war.

cated with some other morbid condition, together with the use of peyote or alcohol, or by immoral mode of living.

Of the 110 living cases, 66 are of the pulmonary or lung consumption with the following complications: eleven with the glandular, three with both the glandular and the bone, two with the bone, and one with a general lymphatic involvement of the system. Thirty of the cases present purely glandular symptoms, two involve both the cervical glands and the bone, six the bones and six others the ear, eye and skin. In 34 cases the tuberculous process appears to have resulted in apparent recovery.

A few examples showing the inroads of tuberculosis and infant mortality in family groups follow:

Group 1. Parents and eleven children, two miscarriages; overcrowded, unsanitary home; father shiftless, indifferent, did not provide for family; mother dead at twenty-nine years of pulmonary tuberculosis and tuberculosis of hip; nine children dead—four of pulmonary tuberculosis, two suspicious of tuberculosis, three of undernourishment; living—a girl of seven years apparently well, a boy of five years having progressive pulmonary tuberculosis and lymphatic involvement of the glands of the neck.

Group 2. Parents and children, unsanitary home, father a tuberculous syphilitic, mother pretuberculous; three children dead of tuberculosis. On mother's side one brother dead of tuberculosis; living, one brother having pulmonary tuberculosis—a half sister with arrested lymphatic condition. On father's side, an aunt and a cousin dead of tuberculosis; living, an aunt having latent pulmonary tuberculosis who also is syphilitic, immoral and alcoholic.

Group 3. A subnormal, low type family, overcrowded, unsanitary home, habitual users of peyote. Seven deaths from tuberculosis, three of which were complicated with syphilis, immorality and alcoholism; one suicide (alcoholic), one death due to syphilitic insanity; ten children dying in infancy.

Group 4. Two unions, (same father)—parents and children. First family, mother and six children dead of tuberculosis; second family, a girl of fourteen living, is an arrested case—a girl dead in infancy of tuberculosis.

Group 5. Parents (father syphilitic) and seventeen children, five living and apparently well—twelve dead in infancy, cause unknown. Very unsanitary living conditions, an old type Indian family.

Group 6. Two unions, (same mother)—parents and twenty children, of which five are living and seemingly well; fifteen dead, of which there was one death each of tuberculosis, pleuro-pneumonia and whooping cough, the remaining twelve dying in infancy chiefly from neglect. This family were former users of peyote and alcohol.

Modern Winnebago Homes

CHAPTER III

FACTORS AMONG THE WINNEBAGO PREDISPOSING TO TUBERCULOSIS

1. Home Sanitation

"Home sanitation among the majority of the Winnebago is extremely bad, especially among those having more Indian than white blood." Almost every Winnebago family is provided with a well-constructed frame house, containing from two to three rooms, and many five and six rooms, having wooden floors and sufficient windows for proper light and ventilation. These dwellings are located in separate yards so that there is no crowding. During the summer they are largely deserted for tents constructed after the model of their primitive bark huts. These tents are set up in the adjoining yards and many of the household articles moved into them.

In spite of the fact that statistics show small families and sufficient modern dwellings among the Winnebago, housing conditions are not all that could be desired. Overcrowding occurs due to the desire of the Indians to be with each other. Very seldom does a family live alone and it is a common custom for several families to huddle together in two or three rooms. The Indian is still imbued with his old nomadic temperament, he becomes restless and cannot remain long in one place. He is constantly visiting about from place to place, dragging the children with him. Every family visited is interrupted in its activities, also; thus the Indian's hospitality becomes one of the greatest drawbacks to his progress. Especially is this true because the "homeless—or those who leave husband or wife—or the sick can always find a home. It is characteristic of the Winnebago that he will let a sick Indian—no matter how ill or with what disease—come into his house to die."[50]

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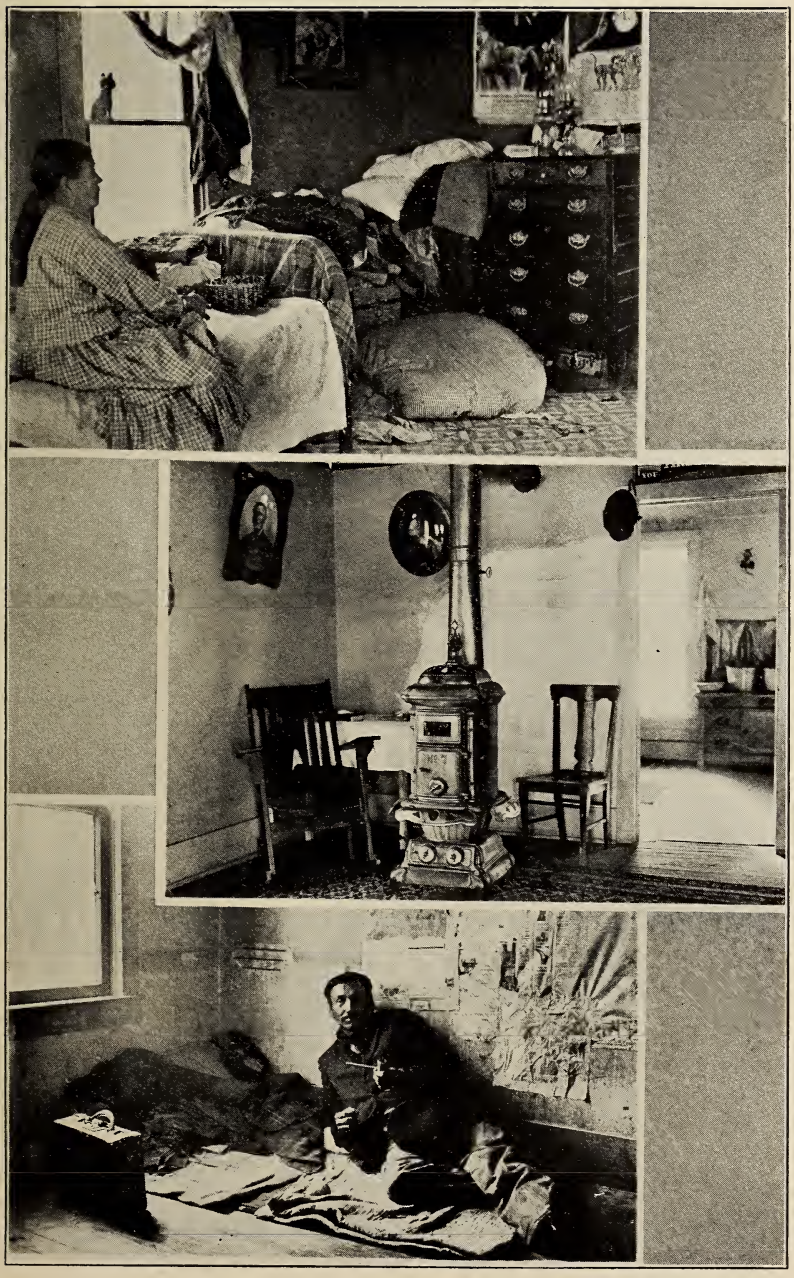
[50] Pelkey, John, Winnebago Indian Policeman.

The Winnebago seem to show a direct relation between housing and the number of deaths per season from tuberculosis. This is highest for the spring months after a prolonged stay indoors, increasing the symptoms. Reservation workers state that in cold weather the windows are habitually closed and every crevice stopped. This living in overheated, overcrowded, ill-ventilated rooms, the sick in among the well, decreases the resistance built up during the summer months when these Indians spend most of their time in the open. Under such conditions a tuberculous infection usually terminates rapidly and fatally. The table below shows that 40.74 per cent of the deaths occurred in the spring season, the greatest number during the month of May.

Table VIII. Showing Number of Deaths from Tuberculosis by Seasons, 1909-1919

Months	Number		Per Cent
December	5		
January	9	25	23.14
February	11		
March	7		
April	12	44	40.74
May	25		
June	6		
July	10	25	23.14
August	9		
September	5		
October	4	14	12.96
November	5		
Total	108	108	99.98

The Winnebago's ignorance of hygiene and their carelessness with regard to sanitary principles prevent their profiting from the advantages provided for them. The women show little ability in making the homes comfortable and healthful, wearing apparel, bedding, and kitchen utensils



Interior Views

A Sick Winnebago Asleep

being heaped on the floor against the wall.[51] The furniture used is insufficient to provide system and order. "The women are always washing but do not know how to keep things clean. For instance, a tub of water is kept constantly at hand, into which the clothes are placed and washed as needed. They do no ironing, merely smoothing the clothes with their hands." Since no heat is applied either in washing or pressing, the clothes cannot be so well protected from disease as under a different method of cleansing. The personal clothing of the Indians is kept cleaner than their houses; yet they are more careless about their hand towels than about their dish towels.

The use of utensils in common is almost everywhere the practice. The common drinking cup and the use of the unwashed dishes of the tuberculous by small children are important factors in the spread of infection. The use by the whole family of a common dish and spoon is quite customary. Also, standing about the house may be several cans of store products in which a common spoon serves for the family and visitors. The smoking of the "peace pipe" in which a lighted pipe is passed, uncleansed, from mouth to mouth, provides a direct source of infection from the disease. In addition to the common use of eating utensils, sleeping facilities are widely shared. Old and young, sick and well alike, sleep in the same beds, as do those affected with active tuberculosis, for the sick are not isolated in any way, and consumptives live in the midst of their families. The typical way for sick Winnebago to sleep is with the bed coverings drawn over their faces. The moisture from the exhaled breath, and perhaps direct expectoration, causes contamination and furnishes a prolific source of infection as "these bed-clothes are seldom changed, aired or washed." Pallets on the floor provide sleeping accommodations for the many relatives and visitors.

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[51]Numerous homes were found in fair condition, and a few were very well kept.

The Winnebago are extremely careless about the disposal of human excreta. Promiscuous expectorating is a common practice. In many homes tin cans, used as spittoons, stand about the house all day uncovered. Only an occasional privy was found at the homes visited. Dressings from tuberculous lesions are thrown about promiscuously.

One of the volunteer field workers believes that the custom of giving away the personal belongings and bedding of deceased persons to those who have assisted with the burial is one of the greatest causes for the spread of tuberculosis and other diseases. She says she has seen bedding covered with thick greenish secretions given away; and that there is no attempt at sterilization, the pillows being merely aired and the blankets washed in cool water.

Another worker cites a case of suppurating glands of the neck in which the secretions had seeped through the dressings upon a heavy wool sweater the child wore during its illness. After the burial this garment together with the bedding was given to a friend. An attempt by the worker to sterilize the clothing resulted in absolute refusal on the part of the Indians concerned.

The Winnebago are a well-to-do people and whatever relation there may be between their food habits and tuberculosis is due rather to their ignorance and social habits than to their failure to secure sufficient food. They keep very few cows, hence use little milk. Possibly this is as much a safety to them as a hindrance on account of the ease with which milk is contaminated and becomes a carrier of disease. They have few gardens or very little poultry, and live largely on canned goods, meat, and bread purchased from the store.[52] "Their meals are irregular as they eat at all hours, exercising little or no control over their eating and

[52]Decayed and infected teeth are very common among the younger generation probably due to alleged "civilized" diet since, in his native state, the Indian ate food that kept them scoured. Tooth brushes are little used except by the young who are taught their merits in school.

drinking." The dog is an important and privileged member of the household—a spoiled child with his nose in every receptacle.

2. Social Customs

Social customs which have survived from primitive days interfere with regular habits of living. Each burial is the occasion for a four days' feast and "every member of the clan is in honor bound to render his services or be held in ill-repute. Religious festivals, such as the so-called mescal meetings, and the medicine dances, contribute to the general demoralization of the people. The mescal meetings are particularly vicious in their effects, while the night feasts which accompany all these ceremonies are a physical, and sometimes moral, debauch. Especially do the children suffer from these gatherings. Their having to lie around and to sleep anywhere on the ground, the change of diet, the consumption of great quantities of meat, especially pork, followed by days of famine, lower their vitality and make their resistance to disease nil. Incidentally it interferes with their regular school attendance and trains them in habits which hinder industry and the building up of their homes."[53]

How far the unstable marriage relation is a factor predisposing to tuberculosis may be a question, yet it is a vital fact in Winnebago life. The primitive customs have been broken down and the restraints exercised by public opinion and a tribal leader have been cast aside, nor are American marriage laws enforced within the group.[54] No less common is the breaking of the marriage bond, "seemingly without the slightest hesitation. This loose marital relation leads to much immorality, not only among themselves but with low whites. Especially is this true of the present genera-

[53] Summary of statements made by government employees.

[54] April, 1913, there was enacted a law legalizing tribal marriages and divorces prior to that date. *Revised Statutes of the State of Nebraska*, 1913, p. 465.

tion." Yet with all this ease of marriage and divorce, numerous Indian couples remain true to each other for life.

There is practically no renewal of tribal blood as marriage within the group is the rule. This may prove a factor in the physical and moral deterioration of the tribe. By reason of the many matings, the whole tribe is more or less related. Yet with all this intermarriage, but one case of the marriage of cousins was found on the reservation.

3. Use of Stimulants

The Winnebago, like other Indians, have been addicted to the use of alcoholic liquors ever since their first contact with the whites.[55] Current report says that until recent years, they have been a very intemperate people. The nearness of their reservation in Nebraska to a large and very "wet" city has undoubtedly increased the temptation and the opportunities for surreptitiously providing them with the forbidden article, but the advent of prohibition has decreased the traffic.

The use of mescal, or peyote, which has been introduced among the Winnebago in recent years, is more insidious and harmful than alcohol because it is connected with religious ceremonies, and thus receives a religious sanction.[56] Government and mission workers are vigorous in their efforts to suppress this evil, but the white population at large, ignorant of its effects, does nothing to discourage or prohibit its use. Mescal is a species of cactus which grows wild along the Rio Grande and southward. For many years the Indians from Arkansas to central Mexico have used it both as a drug, especially for the relief of fevers and hemorrhages, and as a mild intoxicant.

"Its use was spread among the Winnebago under the guise of a new religion and, at the present time, more than a third of the group are addicted to it. Reservation work-

[55]Cf. *supra*, 1.
[56]Cf. footnote 17, p. 11.

Mescal Buttons (Peyote)

ers are a unit in condemning it for its physical and moral effects. Peyote is used as a panacea for all the ills of body and soul. The drug either in its dry state or in the form of a tea is given to all who desire it, whether adult or child, Indian or white. Weekly meetings with all night sessions, under the cloak of religion, partake of the nature of lavish feasts with the result that many dollars worth of meat and other edibles are consumed. The immediate mental effects are those of an intoxication gradually accompanied by an incessant and wonderful flow of vision and music. Apparently, no unpleasant reaction follows its temporary use, as is the case with so many stimulants. Its continued use results in a physical lethargy which appears to destroy ambition and energy. The permanent effects of the drug are a weakening of the powers of resistance, particularly the heart action. The dullness of the children entering school in the fall is apparent, making them appear subnormal. As soon as the drug is eliminated from their system they are able to do work comparable with others of their class."[57]

Local and agency physicians have observed that childbirth of Indian mothers addicted to the use, is attended by greatly decreased expelling power of the uterine muscles and that infants so born are lifeless and not easily revived; that wounds do not readily heal; that peyote users require at least twice the ordinary dose of stimulants; and that with the fatal cases, many of whom were apparently under the immediate influence of the drug when brought to the hospital, the most powerful stimulants produced no results. The agency superintendent states that peyote is responsible for 100 per cent of the recent insanity among the Winnebago.

The use of tobacco is very general among both sexes. The men smoke, but few chew, while the majority of the women chew as do many of the young children of both sexes.

[57]Summary of statements made by agency officials and mission workers.

4. Allied Diseases

The Winnebago, like other human beings, are subject to a variety of diseases some of which predispose to the contraction of tuberculosis. Among these latter are catarrhal conditions, influenza and venereal diseases. George B. Grinnell in his *Indians of Today*, says, "A very large proportion of the northern Indians apparently have, and perhaps have had, catarrh, and seem to show a predisposition to disease of the throat and lungs."[58]

During the winter of 1918 the Winnebago suffered considerably from influenza and attendant pneumonia. The total morbidity from influenza among all Nebraska Indians (2834) was 861 persons or 303.8 cases per 1000 population.[59] Out of this number there were sixty deaths, twenty-five of which were among the Winnebago. The records show that the per cent of deaths among peyote users was twice as great as among the balance of the population.

As to venereal disease the local records show an estimate of 20 per cent syphilitic and 40 per cent gonorrhoeal. Since the date of the above estimate a clinic has been opened at the government hospital at which routine examinations for venereal disease are to be made. Adequate treatment will be forthcoming to all found infected. The findings of the survey thus far have been kindly contributed for use in this study through the courtesy of Dr. D. A. Moore, resident government physician, who says, "As to the prevalence of venereal disease among the Winnebago Indians I beg to advise as follows: Out of 119 Wassermanns, including 100 adults and 19 children, the findings show 55 adults and 5 children[60] with positive reactions with more than 50 per cent a 4-plus positive; 45 adults and 14 children with negative reactions. Other venereal infections including 39

[58]Cf. also *Report of Commissioner of Indian Affairs for the years* 1854, 1855, 1860, 1867, 1869 and 1870.

[59]*U. S. Public Health Report*, XXXIV (Oct. 17, 1919), 2298-2300.

[60]All children were under sixteen years of age with the exception of two, who were under eighteen.

adults and 12 children show 46 positive and 5 negative. This makes a total of 170 tests representing 130 individuals, 91 of whom show some infection. Many were tested for two or three diseases and show two or three infections. In addition to this we have a number under treatment diagnosed by clinical signs. To a certain extent many were selected cases, having been tested because of some suspicious circumstances, but a large number are purely routine tests taken as the Indians came to the hospital as patients for other diseases and were examined for same. I feel as though I am not too generous, due to results of these tests and my observation, by saying that 60 to 70 per cent of the Winnebago on this reservation are suffering with venereal disease either congenital or acquired." Dr. Moore further states that if all Indians found infected with venereal disease could be induced to submit to adequate medical treatment, tuberculosis would be given a body blow.

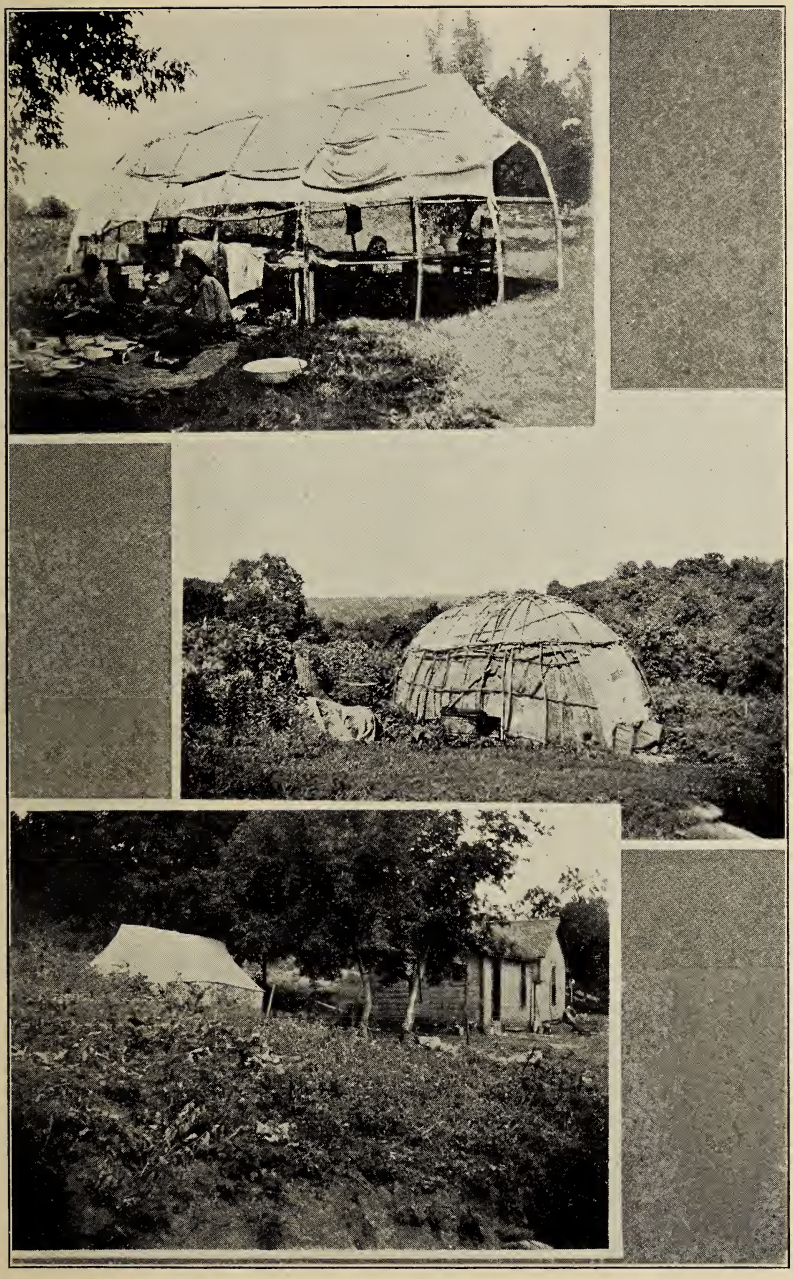
Another physician, Dr. Ralph Ross, who has been connected with the Indian service 24 years, says: "In the three months I was among the Winnebago and Omaha I saw more venereal disease than in the sixteen years I was among the Sioux and the six years among the Apache. These diseases are on the increase and some drastic means should be taken both for treating and preventing the spread of syphilis and gonorrhoea."

The government and volunteer field workers on the reservation state that progress in health education is slow and difficult. The children carefully guarded by them during the school year leave at the end of the term to spend the summer months with the parents, only to return in the fall in an undernourished, anaemic and non-resistant physical condition. Difficulty with the adults too is experienced, their inherent restlessness rebelling at any long continued restraint. Particularly is this noticeable with the hospital cases. Frequently while undergoing treatment they rise from their beds and leave without warning. The citation of a few specific cases may be of interest in showing how

little the Indian realizes the seriousness of tuberculosis, the manner of transmission or the effects of careless living, and how great is the difficulty experienced in helping them.

About three and one-half years ago a field nurse found a boy of twelve years living with a number of old primitive Indians in a small, dirty, overcrowded bark hut. This boy had at that time a tuberculous knee which was being cared for by an old Indian medicine woman. She was using the ground root of milk weed as a dressing, binding the knee tightly so that drainage was impossible. They would not let the worker do anything for him. The next development was an ischio-rectal abscess. They were finally persuaded to have the child enter the hospital for treatment. He remained six months during which time he showed great improvement, gaining in flesh and becoming healthy looking. At the pleading of the relatives and on promise to permit him to return, he went home for a visit and was kept there by force. He ran away but his clothes were hidden so that he would have to remain at home. The next development was pulmonary tuberculosis.

About a year ago a new three room house was built which was no better as to cleanliness than the bark hut. The boy spent his time between the two homes. This family was very careless about the tuberculosis dressings, throwing them uncovered just outside the door. Never using screens, the house was filled with flies. Soon after, the mother of the boy developed pulmonary tuberculosis. Although having been warned repeatedly as to the care of the sputum they still continued to expectorate on the floor or into little cloths which were hidden under the pillow. This mother and son died last spring within a month of each other. The grandfather of this boy died of tuberculosis many years ago. The grandmother has had many cases of tuberculosis to care for in her home, most of whom were relatives. She herself presents an arrested case of phthisis bulbi (tuberculosis of the eyeball), the eye having been removed several years ago.



Upper—Native Tent Abode—A Temporary Shelter While Visiting Friends

Middle—Primitive Bark Hut—The Only One Still Remaining on the Reservation

Lower—Summer Quarters—A Common Sight on the Reservation in the Summer Time

Another case showing the facility of infection was a woman far advanced in the disease having a pulmonary, glandular and general infection of the system, who had living with her a half-brother, four years of age. At a table in a home where she was visiting she was seen to pass a chicken leg from which she had been eating to this young child. She was also using for the family sugar bowl the same spoon that she had been using in her mouth. This woman presents one of the severest cases of pulmonary tuberculosis and lymphatic adenitis on the reservation. Still she continues to live about in many homes in which there are young children. She is married to her second husband who shows an incipient pulmonary infection.

The effect of careless living is shown in the case of a comely young lad of eighteen years who heedlessly roams about on the reservation and to nearby points. He presents a case of active, progressive pulmonary tuberculosis, has enlarged cervical glands and healed skin lesions over the body. He carries a specific infection and has lead an immoral life since fourteen years old.

The effect of other illnesses and apparent parental neglect as contributing factors is shown in the case of a young girl of thirteen who was compelled to leave school because of latent glandular and pulmonary tuberculosis involving both lungs. She has had in succession smallpox, whooping cough, measles, mumps, scarlet fever, a discharging ear and infected eyes. Although in attendance at one of the government schools this child has not always had a permanent home, due to the mother's promiscuous living with many men, causing the child to be shifted about in various homes.

To one individual 23 years of age may be traced several cases of tuberculosis because of intimate contact and close association. This young man's infection is of nine years' duration and at the present time is active to a certain de-

gree. He has had two operations on his neck, one at 14 and one within the last year. Although showing some improvement he still presents a very bad lymphatic and pulmonary condition. There is at the same time a discharging sinus below the left knee. He is living in a home in which there are several cases of tuberculosis and with congested sleeping quarters, though this is one of the few orderly and well kept Indian homes on the reservation.[61]

SUMMARY

In determining the cause of tuberculosis among the Winnebago no single factor can be isolated. "The Indians are creatures of environment. True to the instincts of their nature they like to live the free, roaming, profitless life of the Indian. To teach them the arts of civilized life and induce them to abandon the habits of their ancestors for ours almost amounts to a change of their nature." They were a primitive people. In their native state they were outdoor individuals. They lived in the open, they worked in the open, they slept in the open. They were then a select race, as only the strongest were able to survive the rigors and hardships accompanying the wandering and wigwam life of the old Indian days.

In emerging from this early tribal, nomadic life to that of civilization the Indians have been placed in an environment new and unfamiliar, without protection being thrown about them. First of all then consideration must be given to the changed habits of the Indians—their present inactivity and change of diet—the transition from the old, free, active, vigorous outdoor life full of interest and excitement, to the indoor, inactive, shut-in modern life with food which they do not know how to prepare and to which they are unaccustomed.

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[61] As a result of this study of tuberculosis among the Winnebago the Nebraska Tuberculosis Association has established admission of these Indians to the State Tuberculosis Hospital at Kearney, Nebraska. Ten Indians have been admitted, all but one (deceased) are showing favorable progress. Cf. also Superintendent's Report to Commissioner of Indian Affairs, 1920, Section 11, "Health."

In the old days the Indians dwelt in tepees or bark lodges, with an opening at the top and the fire in the center, making ideal ventilation. When these abodes and their surroundings became intolerable for living purposes, they were picked up and moved to fresh ground. The spot vacated cleaned up of itself. At the present day, houses have been substituted for primitive lodges without the Indians having been taught how to live in them. As the houses can not be moved as were the tepees, and nature not having the opportunity to clean up the unsanitary conditions as they arise and multiply, the occupants continue to live on in the midst of the filth with all their native ignorance and carelessness.

Again the Indian appears to have slight powers of resistance to tuberculosis because the disease is new to him. Races long removed from infection are particularly susceptible to disease. "Some of the white races have acquired a certain degree of resistance to tuberculosis through inheritance (?) and almost universal infection" and have become to some extent immune.[62] The Indian having never experienced the disease until within recent years and not having had sufficient time for the establishing of antibodies to insure to any limited degree an acquired immunity, is extremely susceptible to the disease, and when infection does occur it is very rapid and usually fatal.

Then, too, Indians are not sensitive to suffering in themselves or in other people, not even near relatives. This is characteristic of primitive people throughout the world. Conditions of life are hard under aboriginal environment. Old, crippled and sick persons perish. The strong and well are compelled to care for themselves. Practice of self preservation through centuries has formed habits of behavior toward weaker members of a tribe which surprise and shock civilized men and women.

The frequent removal of the Winnebago to ill-adapted and unsuitable environments preceding their settlement in

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[62]Rosenau, Milton J. *Preventive Medicine and Hygiene*, Third Edition, 147.

Nebraska, is a factor which of itself has been detrimental to Indian progress and physical welfare.[63] The contacts and associations with unprincipled and depraved whites, the unlawful sex relations, the abuse of intoxicants and the ready access to the influence of city life have all proved injurious to health and morals.

Connected with the foregoing are the personal factors: overcrowded, ill-ventilated and unsanitary homes; unclean personal habits; the periodical feasts and famine; and the living about, with its consequent parental irresponsibility and neglected childhood. Through plural marriages[64] are offered increased opportunities for the mating of the tuberculous with the tuberculous and with the alcoholic and syphilitic, frequently all these conditions being found in one or both parents. The dissipation and unwholesome living of the youth, the fact that sixty to seventy per cent of the Winnebago harbor a specific infection, and the indolence and improvidence of many of the men, present a condition favorable to the tendency toward and contraction of tuberculosis.

The Winnebago are passing through a long trial which is to determine whether any remnant of the tribe shall survive. Such survival will arise only from the presence of enough individuals in each generation who will keep themselves free from the vices and practices which are certain to result in the extinction of many of their tribal families. Enough young men and women must be found willing to adopt the advice of medical and sanitary science and live lives which will enable them to beget and rear children free from the taints which are destroying so many members of the tribe.

The present health conditions on the reservation of this once important tribe of Indians become a matter of serious concern, for no portion of a population directly suffers unless the remainder indirectly suffer with it. Tuberculosis is as great a menace to the white population as to the In-

[63]Cf. *Report of the Commissioner of Indian Affairs*, 1846-47, 104.
[64]Not polygamous marriages. Cf. footnote 65, p. 46.

dians themselves, for there are from two to three times as many white people living on the reservation as there are Indians. The Winnebago are beginning to move to the cities where they take up work in the packing houses. Thus far they are only trucking, but soon they will be handling foodstuffs.

It seems wise to proceed energetically at once to prophylactic measures—to the introduction of activities tending toward better health and better morals, and through this protection, which is really the inherent right of the Indian, to protect also the white population which comes directly or indirectly in contact with him. The health situation is no longer an Indian problem, but a community problem—a public health responsibility.

APPENDIX

Family Distribution of Tuberculosis

In the preceding pages we have discussed the incidence of tuberculosis among the Winnebago based upon the partial records covering a ten-year period. A second method of determining its occurrence was attempted by securing histories, as nearly complete as possible, of some of the families in which cases were found. The group studied involves 110 individual families or over one-third the families on the reservation.

Many complex relationships were encountered. The smallness of the group and the fact that there is no immigration and little intermarriage with outside persons, causes numerous unions between relatives. Of the 110 single families, 72 constitute a marriage tangle.

More baffling still is the fact that many of the Winnebago enter into marital relations with a great number of individuals.[65] Technically polygyny is not practiced except in rare instances, although the absence of legal control of domestic relations makes divorce and subsequent remarriage a very easy procedure, and encourages unions so unstable as to amount, at times, to promiscuity.[66] Numerous examples were found of three and four marriages, some of six, eight, or ten, while others are reported as "many husbands" or "many wives", the exact number not being clear in the memory of the relator. Thus the 110 single families[67] include 21 families with children of the half

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[65]The majority of these unions are marriage by tribal custom, which is simply the abandoment of the spouse and perhaps the immediate marriage by Indian custom of another, merely the selecting of a mate and living together by mutual consent.

[66]Cf. footnote 54, p. 35.

[67]By the single family is meant the primitive social unit—the marriage or pairing between one man and one woman, though the union be often transitory and the rule frequently violated. Cf. Howard, *History of Matrimonial Institutions*, I, 89-110.

blood; 13 families in each of which there are children by the same father but of different mothers; and 8 families in each of which there are children of the same mother but of different fathers. Included also in the 110 families are 10 unions with no offspring.[68]

A few illustrations showing the distribution of disease and the complexity and freedom of the marriage relations follow. In one case a man, recently deceased, infected with syphilis, has had six wives. The first wife is still living and is at present mated to her sixth husband. The second wife died of pulmonary tuberculosis and was also infected with syphilis; the third wife gave birth to a boy who died of pulmonary tuberculosis at the age of twenty years; and the fourth wife who had previously been married many times and given birth to many children, became with this husband the mother of two tuberculous children. She is now married to a man who was the father of two deceased tuberculous children by a former marriage.

In a second case a tuberculous syphilitic, being also alcoholic and immoral, was married to two tuberculous women. The first wife now deceased, was also infected with syphilis. She gave birth to ten children, all dying in infancy. The present wife having had many husbands and given birth to several stillborn children became with one husband (family history free of tuberculosis) the parents of a child which is pretuberculous, requiring careful attention. The union of this latter husband to an apparently healthy woman of another tribe (previously married and having borne four healthy children) has resulted in three healthy offspring.

In another case a previously married, tuberculous woman was wedded to a twice previously married tuberculous man, one of his former wives and a child having died of tuberculosis. Very shortly after the demise of the above third wife, the husband mated with a fourth spouse.

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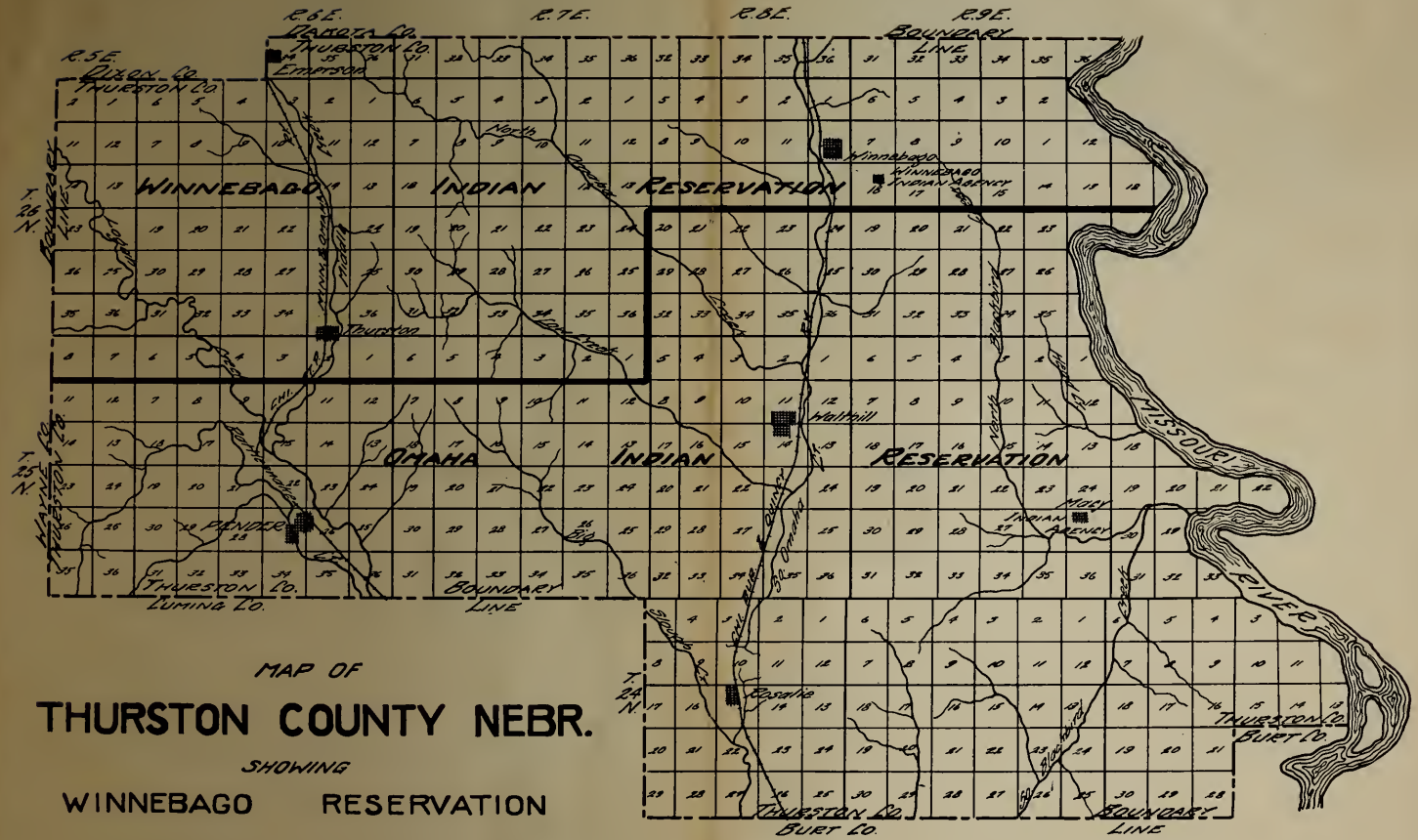
[68]The writer is indebted to Professor George Elliott Howard for valuable assistance rendered in classifying family relationships.

The family relationships of the group studied have been traced through from three to seven generations. Owing to the great frequency of marriage the line of descent is constantly broken. To the extent that it was possible to secure family histories, the line of descent is traced chiefly through the female, and whenever possible through the male line. These relationships are to be graphically represented in the form of pedigree charts depicting the family distribution of tuberculosis. Fifteen distinct trees are in the process of construction. These charts with eugenical analyses will appear in a later publication.



MAP OF

THURSTON COUNTY NEBR.

SHOWING

WINNEBAGO RESERVATION